

**WHAT IS CLAIMED IS:**

1. A variable inertia flywheel apparatus, comprising:

a body fixed to an end of a crankshaft, the body having a plurality of first guide grooves formed in a principally radial direction, the body having a wall formed in a radial direction between a pair of the first guide grooves;

a rotatable member assembled with the body for forming first and second pressure chambers divided by the wall, the rotatable member having a plurality of second guide grooves corresponding to the first guide grooves, an overlapping position of the first and second guide grooves varying on a relative angle of the rotatable member to the body;

a movable mass inserted between the first and the second guide grooves at an overlapping position of the first and second guide grooves; and

a hydraulic pressure supply unit for selectively supplying hydraulic pressure to the first pressure chamber and second pressure chamber.

2. The variable inertia flywheel apparatus of claim 1, wherein the first guide grooves are helically formed.

3. The variable inertia flywheel apparatus of claim 1, wherein the first guide grooves are slanted with respect to the radial direction.

4. The variable inertia flywheel apparatus of claim 1, further comprising:  
a solenoid valve disposed on first and second hydraulic lines connected to the first and second pressure chambers; and

an electronic control unit for controlling the solenoid valve for selectively supplying hydraulic pressure to the first and second pressure chambers.

5. The variable inertia flywheel apparatus of claim 1, further comprising:  
a solenoid valve disposed on first and second hydraulic lines connected to the first and second pressure chambers; and

an electronic control unit for controlling the solenoid valve for selectively supplying hydraulic pressure to the first and second pressure chambers,

wherein the first guide grooves are helically formed.

6. The variable inertia flywheel apparatus of claim 1, wherein the movable mass is bar-shaped.